

[US 010212]

REMARKS**I. INTRODUCTION**

Claims 13-24 have been amended. No new matter has been added. Thus, claims 1-36 remain pending in this application. It is respectfully submitted that based on the above amendments and the following remarks that all of the presently pending claims are in condition for allowance.

II. THE DOUBLE PATENTING REJECTION SHOULD BE WITHDRAWN

The Examiner provisionally rejected claims 1-36 under the judicially created doctrine of obviousness-type double patenting over claims 1, 5, and 9-12 of the copending Application No. 09/793,035. (See 11/2/06 Office Action, pp. 2-3).

Claim 1 of the present invention recites "encoding an uncoded video to generate extended base layer reference frames, each of the extended base layer reference frames including a base layer reference frame and at least a fractional bitplane of an associated enhancement layer reference frame" and "generating frame residuals from the uncoded video and the extended base layer reference frames." Claim 3 of the present invention recites "coding the frame residuals with a fine granular scalable codec to generate fine granular scalable enhancement layer frames." Claim 1 of the '035 Application recites "coding a portion of the video data to produce base layer frames," "generating residual images from the video data and the base layer frames utilizing multiple base layer frames for each of the residual images," and "coding the residual images with a fine granular scalability technique to produce enhancement layer frames."

As can be seen from the above recitations, claim 1 of the '035 Application generates residual images using multiple *base layer frames*. In contrast, claims 1 and 3 of the present invention generates residual images using *extended* base layer frames which each include at least a fractional bitplane of an associated *enhancement layer reference frame*. Thus, the generation of the residual images differs in the source from which they are created. Those skilled in the art

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understand that using base layer frames differs with using extended base layer frames, especially when they include at least a fractional bitplane of an associated enhancement layer reference frame. That is, an extended base layer frame has been manipulated (*i.e.*, fractional bitplane included) so that it no longer has the same properties as a base layer frame. It appears the Examiner fails to address these differences in the double patenting obviousness-type rejection.

The Examiner further stated that the '035 Application may be combined with U.S. Pat. No. 6,614,936 (Wu) to teach that there can be at least a fractional bit plane. However, Wu combined with the '035 Application would not teach or suggest the present application. Wu merely describes bitplanes that are encoded in enhancement layers using variable length coding. Those skilled in the art understand that the encoding of bitplanes and using a bitplane from an associated enhancement layer reference frame are in two separate fields of endeavor. Wu concerns using bit planes to determine the number of enhancement layers for each block in order to encode the bitplanes. The Examiner explicitly stated that "Wu does not specifically disclose the fractional bit plane of an associated enhancement layer reference frame." (See 11/2/06 Office Action, p. 5, ll. 1-2). In contrast, the present invention uses bitplanes from an enhancement layer in order to increase the quality of a base layer. The same arguments may be put forth with respect to the combination of claims 25 and 27, the combination of claims 13 and 15, claim 7, claim 9, and claim 31.

Thus, it is respectfully submitted that claims 1-36 are not an obvious variation of the invention defined in the claims of the '035 Application. Accordingly, it is respectfully submitted that these claims are therefore allowable.

III. THE 35 U.S.C. § 101 REJECTION SHOULD BE WITHDRAWN

The Examiner rejected claims 13-24 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Specifically, claims 13-24 are written in such a manner that a memory medium can be reasonably interpreted as containing instructions to be listed as computer program coded language written on a piece of paper. (See 11/2/06 Office Action, p. 3). Claims 13-24 have been amended according to the Examiner's suggestion. Thus,

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it is respectfully requested that the Examiner should withdraw the 35 U.S.C. § 101 rejection of claims 13-24.

IV. THE 35 U.S.C. § 103(a) REJECTIONS SHOULD BE WITHDRAWN

The Examiner has rejected claims 1-3, 6-9, 12-15, 18-21, 24-27, 30-33, and 36 under 35 U.S.C. § 103(a) as unpatentable over U.S. Pat. No. 6,614,936 (Wu) in view of U.S. Pat. Pub. No. 2004/0071358 (Xin). (See 11/2/06 Office Action, pp. 4-7).

Wu is directed toward a video encoding scheme that employs progressive fine-granularity layered coding to encode video data frames into multiple layers, including a base layer of comparatively low quality video and multiple enhancement layers of increasingly higher quality video. (See Wu, abstract). In Wu, the minimum number of bits needed to represent the maximum value m in a binary format dictates the number of enhancement layers for each block. With n bit planes, n enhancement layers are encoded using variable length coding. (See *Id.*, col. 9, ll. 54-58).

Xin is directed toward an image distribution system that has a source that encodes digital images and transmits them over an err-prone channel to a destination. The source has an image coder that processes the digital images using vector transformation followed by vector quantization. This produces groups of vectors and quantized values that are representative of the images. (See Xin, abstract). Xin discloses the use of bit plane based unequal error protection (UEP). In an exemplary embodiment, a bit-plane layering scheme includes four vectors (DC, AC1, AC2, AC3) where each vector is converted into four bit planes with increasingly more bits. (See Xin, p. 5, ¶ [0072]; Fig. 10).

The Examiner correctly stated that Wu does not specifically disclose the fractional bit plane of an associated enhancement layer reference frame. (See 11/2/06 Office Action, p. 5, ll. 1-2). The Examiner attempted to cure this deficiency with Xin.

Initially, it is respectfully submitted that the combination of Wu and Xin is improper. As

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discussed above, Wu is a video encoding scheme used for progressive fine-granularity layered coding. Wu further teaches that to accomplish this, variable length coding (VLC) is used. Specifically, Wu states “there are n bit planes 226(1)-226(n) that...encode n enhancement layers using variable length coding (VLC).” (See Wu, col. 9, ll. 54-58). In contrast, Xin includes encoding digital images in preparation for transmission over error-prone channels. Xin describes that images were first compressed using VLC. However, because Xin concerns transmissions over the error-prone channels, VLC is not a suitable coding technique because VLC is very sensitive to errors. (See Xin, p. 1, ¶ [0005]). That is, Xin explicitly does not utilize VLC but uses another form of coding technique, particularly VTQ (vector transformation and quantization). (See *Id.*, p. 1, ¶ [0008]). Therefore, the bit planes disclosed in Xin would be applied to VTQ coding instead of VLC that is used in Wu. Those skilled in the art understand that these coding techniques entail fundamentally different procedures. Thus, it is respectfully submitted that the Examiner improperly combined the teachings of Wu with the teachings of Xin.

Even assuming that Wu may be combined with Xin (which the Applicants do not concede), Xin does not cure the deficiencies of Wu. Specifically, Xin does not disclose the fractional bit plane of an associated enhancement layer reference frame. Independent claims 1, 7, 13, 19, 25, and 31 all recite that “each of the extended base layer reference frames includ[e]...at least a *fractional* bitplane of an associated enhancement layer reference frame.” That is, the present invention recites that a part of a single bitplane is included in the extended base layer reference frames. In contrast, Xin merely describes the use of whole bit-planes. Vectors may be converted into these bit-planes and subsequent vectors may include more bits. (See Xin, p. 5, ¶ [0072]). It is further noted that nowhere in Xin is a description concerning the use of fractional bitplanes. Thus, it is respectfully submitted that Xin does not disclose “a fractional bitplane of an associated enhancement layer reference frame.”

Accordingly, it is respectfully submitted that neither Wu nor Xin, either alone or in combination, discloses or suggests “each of the extended base layer reference frames including a base layer reference frame and at least a fractional bitplane of an associated enhancement layer reference frame,” as recited in claims 1, 7, 13, 19, 25, and 31. Therefore, it is respectfully

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requested that the Examiner should withdraw the 35 U.S.C. § 103(a) rejection of claims 1, 7, 13, 19, 25, and 31. Because claims 2-3, 6, 8-9, 12, 14-15, 18, 20-21, 24, 26-27, 30, 32-33, and 36 depend from and, therefore, include all the limitations of allowable claims, it is respectfully submitted that these claims are also allowable for at least the reasons stated above.

The Examiner has rejected claims 4-5, 10-11, 16-17, 22-23, 28-29, and 34-35 under 35 U.S.C. § 103(a) as unpatentable over U.S. Pat. No. 6,614,936 (Wu) in view of U.S. Pat. Pub. No. 2004/0071358 (Xin) in further view of U.S. Pat. No. 6,510,177 (DeBonet). (See 11/2/06 Office Action, pp. 8-9).

De Bonet is directed toward a system and method for encoding, transmitting, decoding, and storing a high-resolution video sequence using a low-resolution base layer and a higher-resolution enhancement layer. (See De Bonet, abstract). A base layer module receives and downsamples a high-resolution video sequence, encodes the resultant low-resolution video using a low-resolution encoder, and outputs a low-resolution encoded base layer that can be decoded by a conventional video decoder. (See Id., col. 10, ll. 10-14). De Bonet incorporates motion vectors. These motion vectors are not computed internally, but use pre-calculated “downsampled” motion vectors computed from the high-resolution video sequence.

DeBonet also does not disclose or suggest “each of the extended base layer reference frames including a base layer reference frame and at least a fractional bitplane of an associated enhancement layer reference frame,” as recited in claims 1, 7, 13, 19, 25, and 31. Thus, neither Wu, Xin, nor DeBonet, either alone or in combination, disclose or suggest the above recitation. Because claims 4-5, 10-11, 16-17, 22-23, 28-29, and 34-35 depend from and, therefore, include all the limitations of allowable claims, it is respectfully submitted that these claims are also allowable for at least the reasons stated above.

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CONCLUSION

In view of the above remarks, it is respectfully submitted that all the presently pending claims are in condition for allowance. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

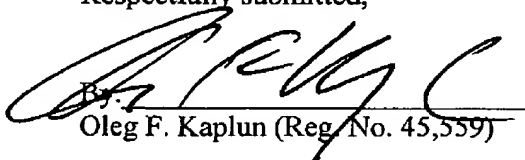
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